

WHAT IS CLAIMED IS:

1. An apparatus for holding a component which includes a shaft with a nozzle for holding of the component set at one end part thereof and moved in an axial direction of the shaft,

the component holding apparatus comprising:

a suction device which is connected at the other end part of the shaft to an air passage formed in the shaft and communicating with the nozzle and which sucks an interior of the air passage, thereby letting the nozzle suck the component via the air passage and hold the component;

a first blow device which is connected at the other end part of the shaft to the air passage and which returns the interior of the air passage to a state of an atmospheric pressure, thereby releasing the suction of the component to the nozzle; and

a second blow device which is connected in the vicinity of the one end part of the shaft to the air passage and which returns the interior of the air passage to the atmospheric pressure state, thereby releasing the suction of the component to the nozzle.

2. A component holding apparatus according to claim 1, further comprising a voice coil motor such that either one of a magnet and a coil is fixed to a circumferential face of the shaft and the other of the magnet and the coil is arranged in a periphery of the shaft, thereby moving the shaft in the axial direction of the shaft, and the second blow device connected to the voice coil motor

to return the interior of the air passage to the atmospheric pressure via an opening opened in the air passage inside the voice coil motor.

3. An apparatus for mounting a component which comprises the component holding apparatus according to claim 1.

4. An apparatus for mounting a component which comprises the component holding apparatus according to claim 2.

5. A component mounting apparatus according to claim 3, further comprising a control device connected to the first blow device and the second blow device, the control device controlling an air feed start timing of the first blow device and the second blow device so that the air passage is turned to the atmospheric pressure state in a period from a time of the nozzle holding the component and reaching a lowest fall point to a time of the nozzle starting to rise, thereby freeing the holding of the component and then mounting the component on an object to which the component is to be mounted.

6. A component mounting apparatus according to claim 4, further comprising a control device connected to the first blow device and the second blow device, the control device controlling an air feed start timing of the first blow device and the second blow device so

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that the air passage is turned to the atmospheric pressure state in a period from a time of the nozzle holding the component and reaching a lowest fall point to a time of the nozzle starting to rise, thereby freeing the holding of the component and mounting the component on an object to which the component is to be mounted.

7. A component mounting apparatus according to claim 6, wherein the feed start timing is controlled on the basis of a weight of the component held by the nozzle.

8. A component mounting apparatus according to claim 7, wherein the feed start timing is a time point when the nozzle reaches the lowest fall point if the weight of the component held by the nozzle exceeds approximately 5g.

9. An apparatus for holding a component, which comprises:  
a shaft having a nozzle for holding of a component at one end part of the shaft and an air passage connecting the nozzle with an interior of a voice coil motor, which is movable in an axial direction of the shaft in parallel to a groove formed in a circumferential face in the axial direction thereof and rotatable in a direction about an axis of the shaft;

the voice coil motor formed like a can extending in the axial direction of the shaft, with having a casing in which the shaft penetrates a central part in a state to be movable in the axial

direction and rotatable about the axis, wherein either one of a magnet and a coil is fixed to the circumferential face of the shaft and the other one of the coil and the magnet is arranged inside the casing at the side of a periphery of the shaft, thereby moving the shaft in the axial direction by an action of the magnet and the coil;

a suction device connected to the voice coil motor to suck the interior of the voice coil motor and a interior of the air passage, thereby letting the nozzle suck and hold the component;

a first blow device connected via a suction tube to the voice coil motor and which returns the interiors of the voice coil motor and the air passage to a state of an atmospheric pressure, thereby releasing the suction of the component to the nozzle;

a second blow device connected to the voice coil motor and which returns the interiors of the voice coil motor and the air passage to the atmospheric pressure state faster than the first blow device, thereby releasing the suction of the component to the nozzle; and

a sealing member with a first packing which is set at a part of the casing of the voice coil motor where the shaft penetrates, formed in the same sectional shape as the shaft, has a hole through which the shaft penetrates, and prevents a leakage of air at the penetration part at a suction operation to the interior of the voice coil motor by the suction device.

10. A component holding apparatus according to claim 9, the sealing member further comprising a pair of second packings formed of a material of higher rigidity than that of the first packing, with holding the first packing therebetween, the second packing having a hole through which the shaft penetrates and a projecting part in the periphery of the hole which is to be fitted in the groove thereby rotating the second packing in the same direction as the direction about the axis of the shaft without accompanying a relative displacement to the shaft when the shaft rotates in the direction about the axis.

11. A component holding apparatus according to claim 10, wherein the sealing member also comprises an urging member interposed between the first packing and a packing at the side of the motor in touch with the casing of the voice coil motor among the second packings, which urges the packing at the motor side to the casing with a pressing force breaking an air passage generated at a contact face part between the packing at the motor side and the casing when the interior of the voice coil motor is returned to the atmospheric pressure state by the first blow device and the second blow device, thereby preventing the leakage of air at the suction operation.

12. An apparatus for mounting a component which comprises the component holding apparatus according to claim 9.

13. An apparatus for mounting a component which comprises the component holding apparatus according to claim 10.

14. An apparatus for mounting a component which comprises the component holding apparatus according to claim 11.

15. A component mounting apparatus according to claim 14, further comprising a control device connected to the first blow device and the second blow device, the control device controlling an air feed start timing of the first blow device and the second blow device so that the air passage is turned to the atmospheric pressure state in a period from a time of the nozzle holding the component and reaching a lowest fall point to a time of the nozzle starting to rise, thereby freeing the holding of the component and mounting the component on an object to which the component is to be mounted.

16. A component mounting apparatus according to claim 15, wherein the feed start timing is a time point when the nozzle reaches the lowest fall point if a weight of the component held by the nozzle exceeds approximately 5g.